

**THE CLAIMS:**

19. A single mode optical waveguide fibre having a light guiding region that includes a central core region, a surrounding region that surrounds the central core region and at least three angularly separated side core regions being disposed radially outwardly from the central core region; the central core region having an average refractive index  $n_0$ , the surrounding region having a refractive index  $n_1 < n_0$ , and each of the side core regions having a non-circular cross-section and having an average refractive index  $n_2 > n_1$ .
20. The optical waveguide fibre as claimed in claim 19 wherein each of the side core regions comprises a transparent optical medium.
21. The optical waveguide fibre as claimed in claim 19 wherein each of the side core regions has a generally arcuate cross-sectional configuration.
22. The optical waveguide fibre as claimed in claim 19 wherein each of the side core regions has a generally rectangular cross-sectional configuration.
23. The optical waveguide fibre as claimed in claim 19 wherein each of the side core regions is composed of doped silica.
24. The optical waveguide fibre as claimed in claim 19 wherein at least four of the side core regions are disposed radially about the central core region.
25. The optical waveguide fibre as claimed in claim 19 wherein the side core regions are positioned equi-angularly about the central core region.

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26. The optical waveguide fibre as claimed in claim 19 wherein the side core regions have a common cross-sectional size and configuration.
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27. The optical waveguide fibre as claimed in claim 19 when in the form of a fibre having a doped silica core, that incorporates the central core region and the surrounding region, and a silica cladding.
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28. The optical waveguide fibre as claimed in claim 27 wherein the side core regions are located within the surrounding region.
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29. The optical waveguide fibre as claimed in claim 27 wherein the side core regions are located at least in part within the silica cladding.
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30. The optical waveguide fibre as claimed in claim 19 wherein the central core region and the side core regions have average refractive indexes in that are enhanced relative to that of undoped silica and wherein the surrounding region has an average refractive index that is depressed relative to that of undoped silica.
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